

Examiner. Accordingly, withdrawal of the objection is respectfully requested.

In the Office Action dated July 27, 2001, claim 1 is rejected under 35 U.S.C. §102(b) as allegedly anticipated by Shiba et al, U.S. Patent 5,714,195. Applicants respectfully traverse.

Claim 1 as amended recites that the ink is applied by a needle painting method, and that the corrective ink is a thermosetting or a UV-curing ink.

According to the needle painting method, filling to the ink correcting hole is more satisfactory. Also, when filling is performed by this method, fine control can be achieved on the ink painting quantity, and the ink painting quantity can be controlled to such a level as to be suitable for the size of the correcting hole. The heaping up of the ink after hardening and shrinking can be controlled to the allowable range

Also, thermosetting or UV-curing ink with high surface tension is used as the corrective ink in applicants' claimed method. As a result, the surface is likely to be smoother because of the surface tension of the ink itself, and the surface of the corrected film after curing will be smoother.

These features are neither taught or suggested by Shiba et al.

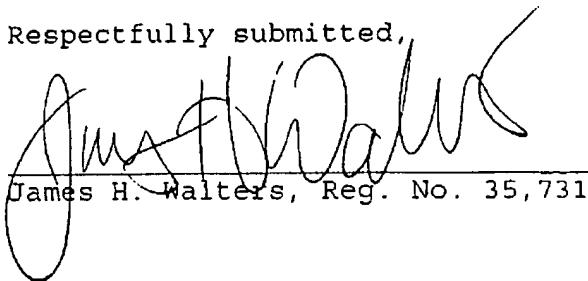
Support for the needle painting method language is found in applicants' specification as filed, page 8, lines 3-6. Support

for the thermosetting and UV-curing ink is found in applicants' specification as filed, at page 8, lines 9-11.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

In light of the above noted amendments and remarks, this application is believed in condition for allowance and notice thereof is respectfully solicited. The Examiner is urged to contact applicants' attorney at 503-224-0115 if there are any questions.

Respectfully submitted,

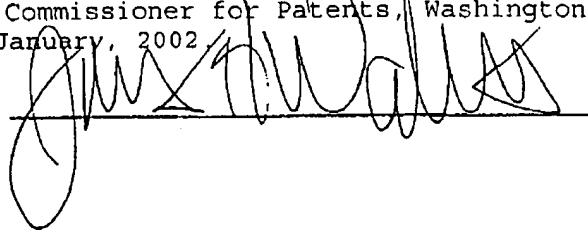


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## MARKUP SHEET SHOWING CLAIM AMENDMENTS MADE HEREIN

1. (Amended) A method for correcting defects on a color filter, comprising the steps of setting a diameter of a laser beam on a circular correcting region including a defective portion when the defective portion of a color filter is removed by irradiation of the laser beam, dropping a corrective ink to an upper surface of the circular correcting region by [an ink jet unit] a needle painting method after the circular correcting region has been removed, wherein the corrective ink is a thermosetting or a UV-curing ink, and hardening and shrinking the corrective ink by an ink hardener thereafter.

# SPECIFICATION MARK UP SHEETS

picture element is cut in rectangular shape, and void patches or unevenly colored portions are likely to occur. Also, the quantity of the colorant to be removed is higher than the case when only the portion near the defects are cut off. As a result, colorant materials are splashed to the surrounding regions, and these may cause new defects. Further, in case the hue of the corrective ink is different by approximately one picture element from the hue of colorant picture element, defects are very likely to occur due to color difference. As a result, the percentage of acceptable products after correction may be low.

To solve the above problems, it is an object of the present invention to provide a method for correcting defects on a color filter, by which it is possible to correct all of protruding defects, white defects and black defects, which are generated in the process to manufacture color filter and to extensively improve the percentage of high quality products.

## ASPECT OF

To attain the above object, the invention of claim 1 provides a method for correcting defects on a color filter, which comprises the steps of setting a diameter of a laser beam in a circular correcting region including defective portion, or more preferably, in a circular correcting region comprising a circle which circumscribes the defective portion in order to ensure better permeation of liquid and better diffusion, and to prevent uneven coloring due to insufficient flow of the liquid when the defective portion on the color filter is removed by irradiation of

the laser beam, dropping a corrective ink to upper surface of the circular correcting region by an ink jet unit so that the ink is formed in spherical shape after the circular correcting region has been removed, and hardening 5 and shrinking the corrective ink by an ink hardener thereafter so that variation of film thickness in the circular correcting region can be controlled within 0.1  $\mu$ m.

The invention according to ~~claim 1~~<sup>another aspect</sup> provides a method for correcting defects on a color filter, said method comprising the step of setting a diameter of a laser beam on a circular correcting region including defective portion when the defective portion on the color filter is removed by irradiation of the laser beam, and depositing a metal film of more than 1000 angstrom in thickness by laser CVD 10 method on the circular correcting region after the circular correcting region has been removed so that back light can 15 be completely shielded.

According to the present invention, it is possible to easily correct all of protruding defects, white defects and 20 black defects caused in the process for manufacturing the color filter, and also to extensively improve the percentage of high quality products. Further, according 25 ~~an aspect~~<sup>to the invention of claim 1</sup>, ink can be dropped by selecting ink color depending on the defective region by the ink jet unit. For example, in case the correcting region is a green pattern layer, a green corrective ink can be dropped. As a result, defects on the green pattern portion can be easily corrected without resulting in uneven

coloring.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram to explain an example of a  
5 method for correcting defects on a color filter according  
to the present invention;

Fig. 2 is a drawing to explain setting of a diameter  
of laser beam in the arrangement shown in Fig. 1;

Fig. 3 represents drawings to explain Example 1 shown  
10 in Fig. 1;

Fig. 4 represents drawings to explain Example 2 shown  
in Fig. 1;

Fig. 5 represents drawings to explain a comparative  
example shown in Fig. 1; and

15 Fig. 6 is an enlarged sectional view to explain a  
defect on a color filter.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Description will be given below on embodiments of the  
20 present invention referring to the drawings. Fig. 1 is a  
block diagram to explain an example of a method for  
correcting defects on a color filter according to the  
present invention.

In Fig. 1, a substrate 2, which has a color pattern  
25 layer as described above formed on it, is placed on an XYθ  
stage (substrate moving stage) 1. This XYθ stage can be  
moved along XY plane and at a tilt angle θ by a driving  
mechanism 3. A defect detecting unit 4 is a device for